



The Blurb



Newsletter of The Phil-Mont Mobile Radio Club

61 Years of Public Service, 1949 to 2010

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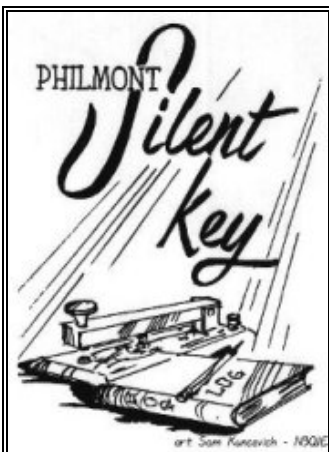
July 2010



And then things really got interesting!

Hope your Field Day was great!

Here's the weather forecast from the Inquirer on June 24, 2010. Were they right? Saturday: Hi 93, L 75 Partly sunny and hot with a chance of late storms. Sunday: H 95, L 74 Partly sunny, very hot and humid.



Joseph S. Elmaleh K3HIJ, 82 of Elkins Park, a lawyer, computer engineer, and colonel in the Army Reserve, died of cancer Sunday, June 20, at Einstein at Elkins Park.

Mr. Elmaleh earned a bachelor's degree and a law degree from the University of Pennsylvania Law School and then practiced law in Center City in the 1950s and 1960s. He loved electronics, said his son, E. Michael, and after consulting for other lawyers on cases involving technology, decided to switch careers.

A funeral [was held] at noon Tuesday, June 22, at Goldsteins' Rosenberg's Raphael-Sacks Memorial Chapel, 6410 N. Broad St. Burial [was] in Montefiore Cemetery, Jenkintown.

The full obituary appears at <http://www.philly.com/philly/obituaries/96860374.html>

<p><i>The Blurb</i> is published monthly by and for the members of The PHIL-MONT MOBILE RADIO CLUB, Inc., whose purpose is to promote Amateur Radio in general, and Mobile Radio in particular. <i>Copying and quoting</i> is permitted with a credit line. We gladly exchange publications with other amateur radio clubs. Requests should be sent to the Editor. <i>Subscriptions</i> are available to non-members for \$12, addressed to the Treasurer.</p> <p>Editor: Rick DeVirgiliis ND3B nd3b@arrl.net 215-908-7225</p> <p>Club Archivist: Gwen Patton NG3P ng3p@arrl.net 610-630-9862</p> <p>Labels and mailing: KB3IV</p> <p>Submissions deadline: All copy must be in the hands of the Editor by the 20th of the previous month.</p>		<p>Directors:</p> <p>W3AOK (12) KB2ERL (10) WU3I (11) WA3KIO (12) N3MT (10) W3STW (11) N3XKE (12)</p>	<p>Contact Phil-Mont: P.O. Box 88 Abington, PA 19001 http://www.phil-mont.org Website: Eric N3QV & Maggie K3XS</p> <p>For club information: Contact any club officer, or the repeaters listed below. Address or club directory changes and articles for the membership e-mail list should be sent to: WB3KOJ@comcast.net</p>
		<p>Sunday Morning Net Schedules</p> <ul style="list-style-type: none"> • 2 Meter/ 70cm Net..... at 0930L on W3QV repeater • 10-on-10 Net at 1000L 28.393 MHz USB (±QRM) • 75 meter Net at 1020L 3.993 MHz LSB • ARES at 2100L on the W3QV repeater 	
<p>Committees</p> <p>Archives: NG3P Audit: NS3K Blurb folding: KB3IV & N3GLU Directory: KB3IV</p>	<p>DX: N3MT Emerg.Coar: K3HWE Field Day: KE3QB Internet: N3QV & K3XS Membership: N3XKE Net Control: KB3IV</p>	<p>Publicity: W3RM Program: Club VP Public Service: KE3QB Refreshments: W3AOK Repeater: W3AOK</p>	<p>Scholarship: W3RM Skywarn: WX3PHI Sunshine: N3GLU VE Program: NS3K Welcome: N3UBY Youth: N3MT</p>

All visitors are welcome!

The club meets at 7:30 PM on the *second* non-holiday Wednesday each month except July and August at **Roxborough Memorial Hospital**, 5800 Ridge Avenue, Philadelphia, PA 19128
Maps and directions are available at www.phil-mont.org.

License Examinations are held on the fourth **non-holiday Thursday** each month at **Community Ambulance Association, 1414 E. Butler Pike, Ambler PA 19002**
Registration begins at 7:00 P.M. Applicants should contact Jim McCloskey NS3K at 215-275-2979 or jmccloskey@msn.com for the latest information.

Club Stations W3QV/R: The Jim Spencer Memorial Repeater System
Ridge & Port Royal Avenues, Philadelphia, PA **Trustee: W3RM**
147.03 MHz + PL 91.5 Hz 444.80 MHz + PL 186.2 Hz
Reach us on EchoLink through W3QV-R
W3AA Trustee: WU3I
W3EM: Field Day/special event station Trustee: N3QV

The Officers

Pres: KB3IV Ed Masarsky 310 Saw Mill Ln. Horsham PA 19044 kb3iv@comcast.net
Vice Pres: N3QV Eric D. Marano, PO BOX 233, Skippack PA 19474 n3qv@arrl.net
Sec: KB3MIV Jen Miller 9427 Kirkwood Rd. 1st Fl. Phila 19114 jencnaz@verizon.net
Treas: W3RM Richard A. Moll roger.mike@verizon.net
Asst. Treas: N3MT Michael P. Taraborrelli michaelmt_1999@yahoo.com

The Prez Sez ...

Field Day is history. I don't have a clue about what took place there because I am writing this one week before it takes place. I know that we all had a good time. We always do. My fondest wish is that we had a large turnout of youngsters, both licensed or not. Our hobby needs a constant infusion of new and eager participants to keep it alive and vital in light of the competition from newly developing technologies. Much of the current forms of communication are so impersonal. We, in our hobby, have been able to put a name, face and purpose to what we do. Many of us are involved in public service, while others are into experimenting. Then, there are the most important members of the hobby, the "Elmers", who gladly give their time and knowledge to help the new or sometimes oldtime Hams with solving or understanding any issues that they may have.

I was privileged to be present at the May 27th VE Test Session in Ambler, where we had our youngest ever candidate take an examination for Technician Class license. Congratulations to Benjamin Newman, 6 years old, who passed and received his new callsign, KB3UPD. (*Pictures page 5.*) His Dad, who is not yet a Ham, was very proud, but not surprised, at his son's accomplishment. There were two other Hams in his family awaiting the good news, they are his Mom and his Grandfather. Ben even agreed to try the General exam while he was there, even though he had not reviewed the study material. While not successful, he said he would be back soon to upgrade. I have to thank this bright and energetic young man for giving me renewed incentive to pick up the Extra Class study guide and

begin my journey to the final frontier of our hobby. I wouldn't be surprised if he arrived there before me.

My request for additional Net Control Operators for our Sunday morning net was fulfilled at the June meeting. Thanks to Frank, KB3TEZ and Carmen, KE3QB for stepping up to the plate.

Finally, best wishes to Don, WB3KOJ, for a speedy recuperation from his medical issues and hope he and Natalie have a pleasant summer.

de Ed, KB3IV

Phil-Mont
Birthdays & Tidbytes

July Birthdays

02 Ted Katz - N3OWM
 Alice Popovic (XYL W3AOK)
 03 Nicole Bohlander (XYL WA3KLR)
 10 Natalie Gordon - WB3KOH
 James Perry - KJ3P
 12 Grace Smith (XYL K3GBA)
 14 Larry Clifford - W3UY
 23 Art Weiner - WX3PHI
 25 Jinny Haring - W3IIN
 27 Robert Hill - KB3HNB
 29 Jim Larkin - KA2FFP
 31 Steve Hoch - WU3I

Membership Stats

At press time, P.M.R.C. had:
 79 Full Paid Members
 8 Family Members
 6 Youth Members (Under 17)
 2 Honorary Members
 0 Pending Member

NOTE: Please contact Ed, KB3IV, with any future directory changes or mailing issues.



***Next test session is Thursday evening,
July 22nd***

Many thanks to our VE team!

From the Secretary ...

PMRC BoD Meeting Minutes, June 2nd, 2010

KB3IV began the meeting at 2000. Attending the meeting were Ed, KB3IV; Al, W3STW; Bill, W3AOK; Steve, WU3I; Dick, W3RM; Gene, N3XKE; Fred, WA3KIO; Bob, KB2ERL; and Jen KB3MIV.

Treasurer - W3RM reported on the finances. All members accepted the report. Scholarship – W3RM prepared a formal resolution to the 2011 scholarship expansion. WU3I motioned to accept the expansion, W3AOK seconded the motion and all members agreed on the expansion. Membership – Two new youth membership applications were turned in, Audrey Uebelhoer, KB3UFX and Michaela Uebelhoer, KB3UFY. Net Control – The board talked about the need for more net controllers. Please let KB3IV know if anyone is interested in volunteering. Programs – the board discussed future general meeting programs. Repeater – The repeater is working well. We spoke about off site repeater locations. Field Day – The board chatted about the upcoming event. Be sure to bring your family. VE Session – The board conversed about the previous VE session. There were three contestants. One of which was an extra upgrade to KB3SJS, a person left with a general

class license and there was a new Tech, which is a six year old, Benjamin. New Business discussed was the possibility of club T-Shirts or sweatshirts. The next board meeting will be in September after the summer break. There was a motion made to adjourn the meeting at 2145.

PMRC General Meeting Minutes, June 9th, 2010

Ed, KB3IV, called the meeting to order at 2010. There were 24 people attending.

W3RM gave the Treasurer's report. W3RM also reported on the recent scholarship expansion that the board agreed upon. There will be more information on the scholarship expansion in the Blurb. KB3IV covered birthday announcements. KB3IV reported on the need for at least two more net controllers for our Sunday Morning Nets. Two members stepped up during the meeting, KB3TEZ and KE3QB. KB3IV reminded everyone to wish Don, WB3KOJ, a speedy recovery. NS3K reported on the recent VE Session. KB3SJS became an extra, someone left with a general class license and there was a new Tech, which is a six year old, Benjamin Newman. Congratulations to them! KB2ERL asked the meeting members if there was any interest in club T-Shirts or sweatshirts. There was some interest with hoodies, sweatshirts and the possibility of patches for the club. W3NE stated he would like to see one of the old logos make a come back in the club. N3XKE congratulated our two new youth club members Audrey Uebelhoer, KB3UFX and Michaela Uebelhoer, KB3UFY. The status of the repeater was discussed. All is well. KB3IV turned the meeting over to the Field Day staff, KE3QB and WU3I, to discuss the upcoming event. There will be the addition of internet access at the field day site this year thanks to WA3BXH. The meeting adjourned at 2140.

de Jen, KB3MIV



6 year old Ben perusing the test and ...



... leaving as KB3UPD

Radio Stores ... 'N' More

by Bob Thomas, W3NE

DR. GEORGE H. BROWN **Mathematician, Engineer, Inventor**

I'm taking a break from the account of my H&R days to relate a few notable achievements in radio from a man you probably never heard of. From the article's title, an easy guess is that I refer to Dr. George H. Brown. Before going any further, it has to be stated that this article is based almost entirely on Dr. Brown's autobiography with the unlikely title, *and part of which I was*. That unique title reveals the unconventional nature of this brilliant scientist.

George acquired an interest in radio as a youngster from a ham friend around 1921 in Portage, Wisconsin. He graduated from the University of Wisconsin with a Ph.D. in theory of RF field analysis, broadcast radio antennas and ground systems. Dr. Brown was hired by the RCA Research Department, Camden, in 1934 – an event immediately rewarding, for both Brown and the Radio Corporation of America.



WCAU was a major Philadelphia radio station with a new RCA 50,000 Watt transmitter and elaborate antenna near Newtown Square. The antenna, like those of most leading stations of the day, was manufactured by the Blaw-Knox Tower Company. It was an expensive, complex structure of “classic” proportions, consisting of a lower inverted-pyramid of square cross section 187-feet high, but only a foot wide at the base, where it rested on a (big!) insulator. It expanded outward to twenty-six feet on a side at the top. On top of that was an upper pyramid, which narrowed to two-feet at the top, and above that was a pipe mast, giving the tower a total height of 500-feet. All well and good except for one detail: *WCAU could barely be heard in Philadelphia!*

Dr. Brown was assigned by RCA to investigate the abysmal performance of the WCAU antenna and design corrective modifications. He conducted extensive field strength measurements that supported observed weak metropolitan reception but revealed nothing useful for making improvements. For that, Brown decided to employ “modeling,” a technique he and a classmate had perfected as graduate students at Wisconsin University. “Modeling” involves construction of an

exact scale model of an antenna, say 1/100 full size and testing it at 100 *times* the normal operating frequency. The model antenna is rotated on a turntable while field strength measurements are made at various distances. Using experimental data from several tower configurations at the university, they developed complex mathematical equations that could accurately predict performance of almost any kind of antenna tower.

For the WCAU antenna modeling project, Brown selected a scaling factor of 1/64 full-size, resulting in a model about 8ft. high and .406 in. wide at the center. The RF field around the model antenna was then accurately measured at a frequency of 74.88 Mc. (64 times WCAU's 1934 carrier frequency of 1170 kc.). Test data enabled Brown to calculate the characteristics of the full-size Blaw-Knox tower which showed the central bulge to be the cause of its aberrant behavior. Since replacement of the tower would have been prohibitively expensive, Brown had to design a modification to compensate for the improper shape of the B-K tower. His calculations showed the best approach was to remove the pipe extension mast and add a large ring around the top of the tower, but insulated from it. The ring was connected to the top of the tower through a variable inductance to trim the radiated RF pattern. That enabled the station to broadcast with good coverage for several years until it was moved to Cinnaminson, N.J.

Dr. Brown's calculations showed the optimum shape of a broadcast antenna to be nothing more than a simple, slim constant-cross section tower used singly or with additional towers if directivity was required. In a stroke, he revolutionized broadcasting with mathematical equations for calculating antenna physical characteristics and their radiation patterns. This significantly reduced cost and complexity of antenna towers and enabled many stations to operate on the same frequency at night without mutual interference, vastly expanding the number of stations that can be accommodated in the limited number of channels. In 1937 Dr. Brown published a paper describing his design methods for directional antennas and ground systems that was so comprehensive it was adopted in whole as an FCC recommendation. Closer to our hobby, radio

telescope pioneer John Kraus, W8JK, wrote in his book *Big Ear*, that he had based his "8JK" close-spaced beam antenna, very popular before the war, on design principles for directional antennas Brown had published in a 1938 article.

For all the mathematical power in Brown's equations for analyzing a known antenna system, they would not work in reverse – to design a system of towers that would radiate a specified directional radiation pattern. Initially that involved a cut-and-try process beginning with an educated guess to get close to the desired directional pattern, then making successive minor changes in the figures to arrive at the desired pattern. A solution could take several days to calculate. The problem eventually was eliminated by an analog computer employing 52 vacuum tubes, called an *Antennalyzer*, which was capable of solving eight simultaneous equations that predicted antenna directivity. The instrument incorporated a cathode ray tube on which desired patterns were drawn with a crayon. Several knobs were then adjusted, randomly at first, to obtain a CRT trace that approximated the required pattern. Minor adjustments were then made to achieve exact coincidence between the drawn pattern and the CRT trace. The simplicity of this ingenious instrument was demonstrated when Dr. Brown's secretary was able to twiddle the knobs to determine all the parameters for a complex directional antenna array in fifteen minutes!

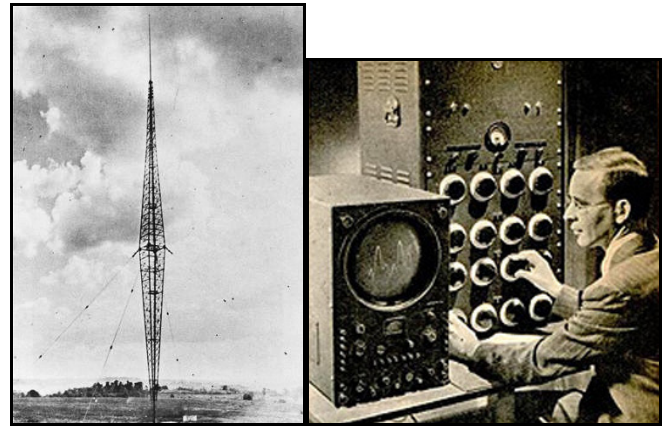
Dr. Brown's focus changed in the spring of 1938 – you might say it "downsized" – from mammoth broadcast arrays to a new challenge: To design a simple antenna for base stations of mobile communications systems, such as used by police, fire, taxi, and delivery companies. He and two colleagues came up with a new kind of antenna consisting of a quarter-wave vertical radiator above four quarter-wave horizontal rods spaced at ninety degrees to each other. Sound familiar? They called the new creation a *Ground Plane* antenna. The first ground plane antenna was installed for police communications atop the Haddonfield, N.J. firehouse. Not only did it eliminate spotty coverage previously encountered, it began to cause interference with police radio in Philadelphia! The designers continued with refined tests of the antenna and found that it performed just as well

with only two ground plane rods as with four. However, when some of the RCA Sales Department saw the two-element ground plane, those self-professed “technical experts” expressed doubt that it would radiate equally in all directions despite evidence to the contrary. Quoting Dr. Brown, *“To quiet them we used four ground [plane] rods for a while, stilling the criticism. When the antenna became really popular, we did not dare confess to our ruse.”* Later, ground plane antennas in the 35 Mc. band were ordered for use on New York Harbor fire boats. Because of concern that transverse radials would not clear dockside obstacles regularly encountered by the boats, only two ground rods, running fore and aft, were used with complete success. Despite every assurance of the inventor to the contrary, ground planes became destined, to this day, to be made with four radials, whether needed or not. The ground plane antenna became so widely adopted that by the end of WW-II, RCA had sold over 50,000!

The next challenge for George Brown came from the new television broadcasting service in New York City by RCA’s subsidiary, NBC. A non-directional antenna with gain was needed for TV transmission from the top of the Empire State Building. He designed another new antenna configuration consisting of four horizontal rods extending from a central mast. It was dubbed a “turnstile” antenna from its similarity to the common device of that name. Each element was driven with an appropriate RF phase shift, and gain was achieved by vertically stacking several sets of turnstiles. Later the plain rods morphed into wide bandwidth pipe elements that looked like bat wings, which became the moniker of that form of turnstile for television transmission.

Doc Brown was a versatile engineer who, in addition to his far reaching antenna designs, was also involved with RF heating applications for drying penicillin, welding plastic sheet, detonating explosive rivets used at inaccessible places on aircraft, and heat treating metal surfaces. He was deeply involved in international color television standards. Although I only encountered him twice at RCA, it was obvious he was “a man apart,” not only in his rigorous scientific thinking, but as a

philosopher. A pity more people in radio are not aware of this remarkable man.



Blaw – Knox type antenna and the “Antennalyzer”

For Sale:

Double Braided Dacron Rope 3/16 diameter.
Black in color. Will cut to requested length. \$0.14 per foot.

Mosley TA-33 beam \$100.00 each (2 available)

Cushcraft A-3 beam \$100.00 (1 available)

Ham M rotors with control boxes rebuilt and guaranteed for one year. \$150.00 each (3 available)

Contact **Steve, WU3I**, with any questions about the items above.

Please feel free to forward to other clubs of which you are a member.

Also for sale ...

Contact Tom Bohlander WA3KLR, 215-536-1331

6 foot telephone relay rack on casters,
Ballantine ac voltmeter Model 300G, 7" rack-mount,
Optoelectronics FC-50 frequency counter,
Pagel Electronics 6-VHF-A frequency counter,
National One-Ten VHF super-regen receiver, c. 1936, restored.

ARRL handbooks 1933 - onward

RCA Aeriola Senior, 1-tube battery receiver

Rider's Perpetual Troubleshooter's Manuals Volumes 1 - 17 plus indexes

Atwater Kent 35, c. 1926, fair condition

Zenith tombstone receiver Model 5-S-228, c. 1938, restored, excellent original finish.

Kreco 10 meter coaxial vertical antenna,

40+ mobile antennas,

old technical books and parts.

July at PMRC ...*There are no meetings in July and August*

1st	Thurs Canada Day
4th	Sun - Independence Day K3XS NCS
5th	Apple Turnover Day *
11th	Sun - KB3TEZ NCS
14th	Bastille Day
18th	Sun - KB3IV NCS
22nd	Thurs – VE session
25th	Sun – KB3SJS NCS

**OK, so it's a slow month!*

And don't forget the **ARES** net every
 Sunday night at 2100L on the club repeater.

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***First Class Mail***

The Phil-Mont Mobile Radio Club, Inc
 310 Saw Mill Lane, Apt 6D, Horsham PA 19044

The Blurb